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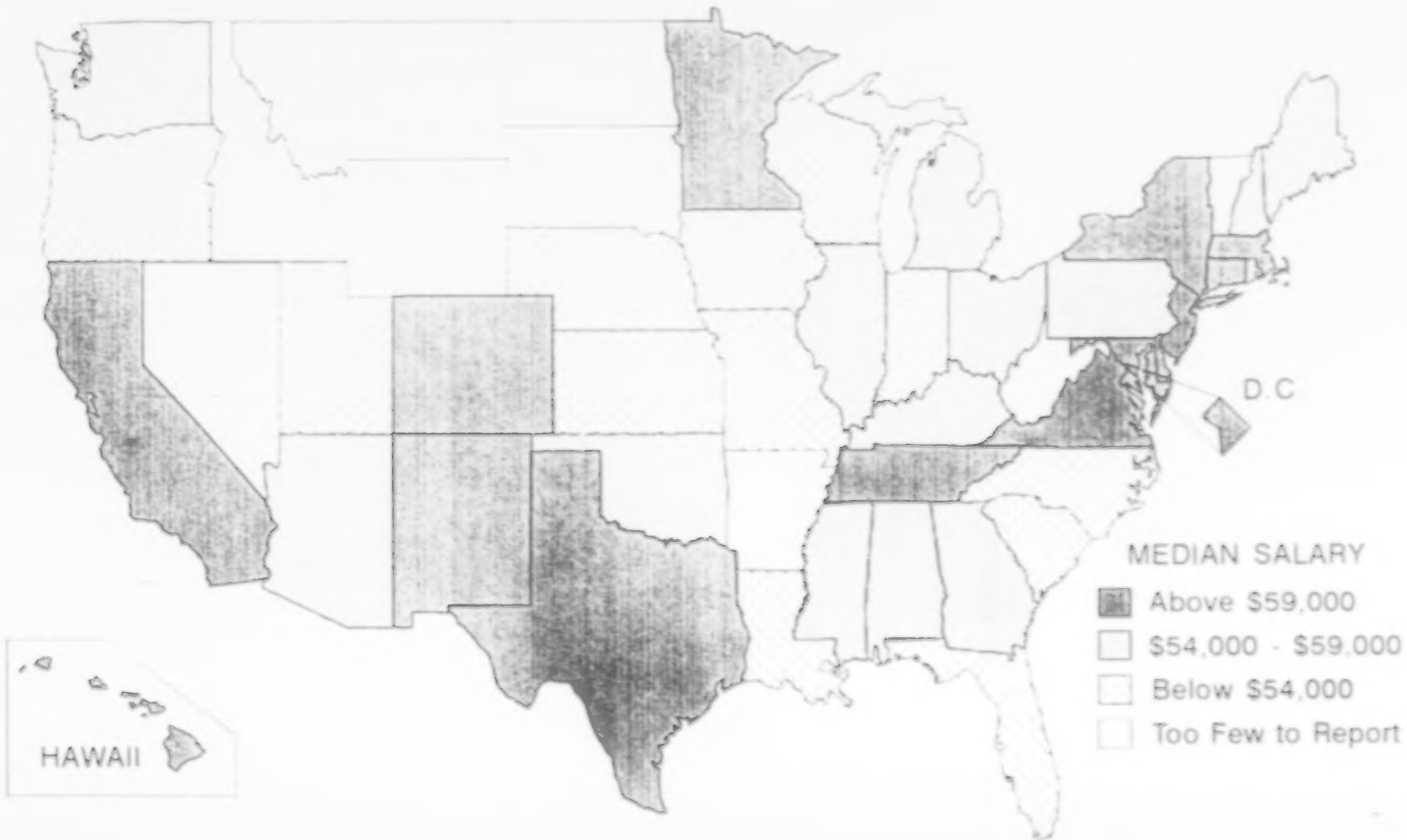
AIP REPORT

1992 SALARIES:
SOCIETY MEMBERSHIP SURVEY



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1992 SALARIES:

SOCIETY MEMBERSHIP SURVEY

Jean M. Curtin and Raymond Y. Chu

The American Physical Society
Optical Society of America
Acoustical Society of America
The Society of Rheology
American Association of Physics Teachers
American Crystallographic Association
American Astronomical Society
American Association of Physicists in Medicine
American Vacuum Society
American Geophysical Union

COVER (1)

This figure illustrates the variation in median salaries by state of residence. California and several states in the sunbelt and along the eastern coast maintain the greatest concentration of society members and the highest Ph.D. salaries in the nation. Heavy representation of industry and national laboratories within these states, and the higher salaries associated with such employment, account for the salary distribution found within these areas. States where relatively low salaries are observed (the Plains and Southern states) generally have relatively few society members, most of whom are academically employed. Where shading is absent, there are too few society members to report reliable median salaries.

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INTRODUCTION

The 1992 Salaries: Society Membership Survey is the eighth in a series of salary reports developed by the Education and Employment Statistics Division of the American Institute of Physics (AIP). The report provides nationwide data on the salaries and demographic information from members of AIP's Member Societies. The following are a few highlights from the report:

- Across all degree levels, the median annual salary for society members reached $58,000 in 1992.
- The median salary increase for the period from 1990 to 1992 for members with PhDs was between 6 and 8%, depending on the employment sector.
- Across all employment sectors, postdoctorates report a median annual salary of $30,000.
- In general, society members employed in industry and other non-academic employment sectors are younger, and earn higher median salaries than those employed in academe.
- Society members with doctoral degrees employed in the hospital/medical services sector earn the highest median annual salary, $78,000, followed by the industrially-employed at $71,500. Members employed at 4-year colleges report earning the lowest median salary, $43,000.
- Over one-third of full-time employed PhDs supplement their principal salaries with earnings from additional sources such as consulting, summer research and summer teaching. On average, supplemental sources add another $9,000 in income.
- The highest median salary nationwide is earned by society members employed in the Pacific states ($65,000). Employees in the West North Central states earn the lowest median annual salary ($50,000).
- On average, female society members report earning lower salaries than their male counterparts, even after their salaries are statistically controlled for differences in degree, employment sector and years of experience.

Methodology

The 1992 Membership Sample Survey was mailed to a random sample of one-fifth of the United States membership of the AIP Member Societies. Societies with the smallest number of members, the American Association of Physicists in Medicine, the American Crystallographic Association, and the Society of Rheology, were sampled at a higher rate than the larger societies to ensure a sufficient number of respondents to provide reliable data. Approximately 19,000 questionnaires were mailed out.

Sample members were sent a two-page questionnaire entitled 1992 Membership Sample Survey containing demographic and employment-related questions. Several weeks after the initial mailing, a second wave of surveys were mailed to society members who did not respond to the first mailing. Approximately 12,500 completed questionnaires were returned to AIP, resulting in a 66% response rate.

Content of the Report

A major objective of the Membership Sample Survey series has been to elicit information on what, in particular, drives salaries earned by members of AIP member societies. In order to examine the question, the 1992 Salaries: Society Membership Survey Report presents the data collected in a form descriptive of where members live, where they work, what their degree level is and how much work experience they have.

Since a large majority of AIP member society members have PhD degrees, most tables and graphs presented in the report document PhD salaries. Salary rates and salary structures in all major employment sectors that employ PhD-level members are described. The principal employment sectors include universities, colleges, industry, government, nonprofit organizations, federally-funded research and development centers (FFR&DC's) and hospitals/medical services. Salaries of lower-level degree holders are presented in the report but must be interpreted with caution since the group is both under-represented and atypical in terms of its affiliation with AIP member societies. Given that a larger percentage of society members are employed in the academic sector than in any other sector, salary information is displayed for members with various academic ranks and academic salary bases. A description of salaries by primary work activity is also included to reveal salary differences of society members in the industrial sector. Finally, the growing concern that women earn significantly lower salaries than men with similar levels of experience and education warranted a section in the report dedicated to that issue.

Figure 1. Variation in median salary for PhDs by geographic division, 1992

Table 1. 1992 salaries by geographic division, PhDs. *(a)*

	Median Salary	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)				
New England	60.0	63.9	26.5	46	575
Middle Atlantic	64.4	66.7	33.5	45	1082
South Atlantic	60.0	62.3	24.7	45	1278
East North Central	54.0	58.6	28.3	45	859
East South Central	56.0	58.5	24.5	47	239
West North Central	50.0	55.8	23.5	44	318
West South Central	58.0	61.8	26.5	44	430
Mountain	61.2	61.7	19.7	45	658
Pacific	65.0	69.5	33.2	45	1432

(a) See Appendix A for state composition of each division.

SALARIES AND GEOGRAPHIC LOCATION FOR PhDs

• Median salaries for society members holding doctoral degrees vary with geographic location, ranging from a low of $50,000 in the West North Central states to a high of $65,000 in the Pacific states (see Figure 1). Employment sector is a fundamental determinant of variability in society member salaries, and the differences in salaries reflect the types of jobs in different parts of the country.

• Overall, society members employed in industry and other non-academic employment sectors are younger, and earn higher median salaries than their colleagues employed in the academic sector. Geographic regions with the highest median salaries, the Pacific and Middle Atlantic states, have a higher percentage of PhDs working in industry (31% and 35%, respectively) than members employed anywhere else (see Table 2). The lowest median salary is reported in the West North Central district where a majority of society members are employed in the academic sector (74%).

Table 2. 1992 salaries by selected employment sector and geographic division, PhDs.

	Academe			Industry			Other		
	Median Salary	Median Age	%	Median Salary	Median Age	%	Median Salary	Median Age	%
New England	52.0	45	54	79.0	46	25	65.0	45	21
Middle Atlantic	54.0	47	51	72.0	42	35	65.1	48	14
South Atlantic	51.0	45	41	70.0	44	16	62.0	46	43
East North Central	50.0	46	67	65.0	43	17	60.0	44	16
East South Central	43.0	46	49	64.0	46	13	60.0	47	38
West North Central	46.7	46	74	67.5	40	19	*	*	7
West South Central	47.3	46	60	69.0	42	27	68.1	43	13
Mountain	50.0	45	38	66.4	44	13	69.0	45	49
Pacific	58.0	44	39	73.0	46	31	70.0	43	30

* *Number of respondents was too small to calculate reliable medians.*

• Some members employed in non-academic employment sectors, such as national laboratories, earn significant salaries. Two of the largest national labs, the Sandia National Lab and the Los Alamos National Lab, are located in New Mexico where 72% of the society members report working in the FFR&DC sector and earning a high median annual salary.

• Relatively low median salaries are reported in the West North Central and East North Central regions ($50,000 and $54,000, respectively). A very high proportion of society members in these states are employed in academe, mostly at state universities or small private colleges where salaries tend to be low (see Table 2).

• PhD society members working in the state of New Jersey earn the highest median salary in the country ($72,000), due in part to the high percentage of members employed in industry (61%) where salaries are high (see Table 3). Median salaries are lowest in Kansas, Nebraska and Iowa, where better than 80% of the employed society members work in the academic setting.

Table 3. 1992 salaries and employment distribution for selected states, PhDs. *(a)*

	Median Salary (in thousands of dollars)	Mean Salary	Standard Deviation	Median Age	Total Number Known	Academe %	Industry %	Government %	FFR&DC %	Other %
Alabama	56.0	60.3	25.6	44	71	47	22	25	-	6
Arizona	55.0	57.6	20.5	44	115	70	12	8	7	3
California	68.0	71.4	34.9	45	1181	34	32	7	22	5
Northern	70.0	73.9	30.2	45	597	22	34	11	28	5
Southern	64.0	68.8	39.2	44	584	46	31	3	16	4
Colorado	60.0	60.7	19.9	45	194	32	21	39	7	1
Connecticut	65.0	65.4	25.5	43	89	57	32	5	-	6
Delaware	61.0	62.3	22.4	42	44	34	46	2	-	18
DC	64.0	69.3	34.1	48	230	7	3	82	-	8
Florida	50.5	54.1	20.2	44	145	74	9	16	-	1
Georgia	55.0	56.4	19.1	43	73	71	11	4	-	14
Hawaii	65.0	65.5	19.0	42	37	67	14	11	-	8
Illinois	55.0	57.3	22.3	43	261	56	15	2	20	7
Indiana	51.1	57.8	21.4	49	96	92	3	-	-	5
Iowa	47.1	52.1	22.5	41	56	85	9	2	4	-
Kansas	43.3	46.7	15.9	48	39	90	5	-	-	5
Kentucky	55.0	54.6	16.3	50	24	96	-	-	-	4
Louisiana	52.0	54.6	21.7	47	38	71	21	5	-	3
Maine	55.0	55.3	17.6	51	22	82	9	-	-	9
Maryland	60.0	63.5	22.2	45	413	24	19	43	4	10
Massachusetts	62.0	65.6	27.4	46	392	48	25	11	4	12
Michigan	54.0	59.8	23.2	43	186	63	25	2	-	10
Minnesota	60.0	60.2	20.7	40	105	54	37	2	-	7
Mississippi	54.0	51.9	16.5	42	34	44	12	41	3	-
Missouri	52.0	61.8	30.9	48	79	75	19	1	-	5
Nebraska	46.8	48.6	18.7	44	23	87	-	4	-	9
New Hampshire	54.0	57.2	22.3	45	27	63	22	15	-	-
New Jersey	72.0	74.5	28.9	43	268	25	61	5	7	2
New Mexico	68.0	66.7	19.1	45	258	16	9	2	72	1
New York	62.0	65.0	37.9	45	566	53	28	1	9	9
Northern	59.0	61.1	21.9	46	288	67	27	1	-	5
Southern	65.0	68.9	48.5	44	278	39	29	1	18	13
North Carolina	53.1	59.8	24.5	48	86	80	11	8	-	1
Ohio	55.0	60.4	40.4	46	207	61	20	9	1	9
Oklahoma	55.5	57.8	22.9	46	50	54	28	14	-	4
Oregon	51.9	55.3	19.1	44	56	75	18	5	-	2
Pennsylvania	59.0	61.9	24.7	48	247	68	22	3	-	7
Rhode Island	50.0	55.2	25.1	48	33	85	6	6	-	3
South Carolina	50.0	51.4	17.0	43	49	74	16	2	6	2
Tennessee	59.8	60.2	27.1	48	110	42	9	2	46	1
Texas	60.0	64.0	27.5	44	326	58	28	3	-	11
Utah	50.0	51.5	15.7	44	37	84	8	3	-	5
Virginia	64.0	64.8	20.5	47	217	37	27	24	7	5
Washington	55.0	58.6	20.4	44	134	52	26	7	12	3
Wisconsin	50.0	57.1	27.6	48	109	78	13	-	-	9

(a) Several states were not included above because the number of respondents was too small to calculate reliable statistics.

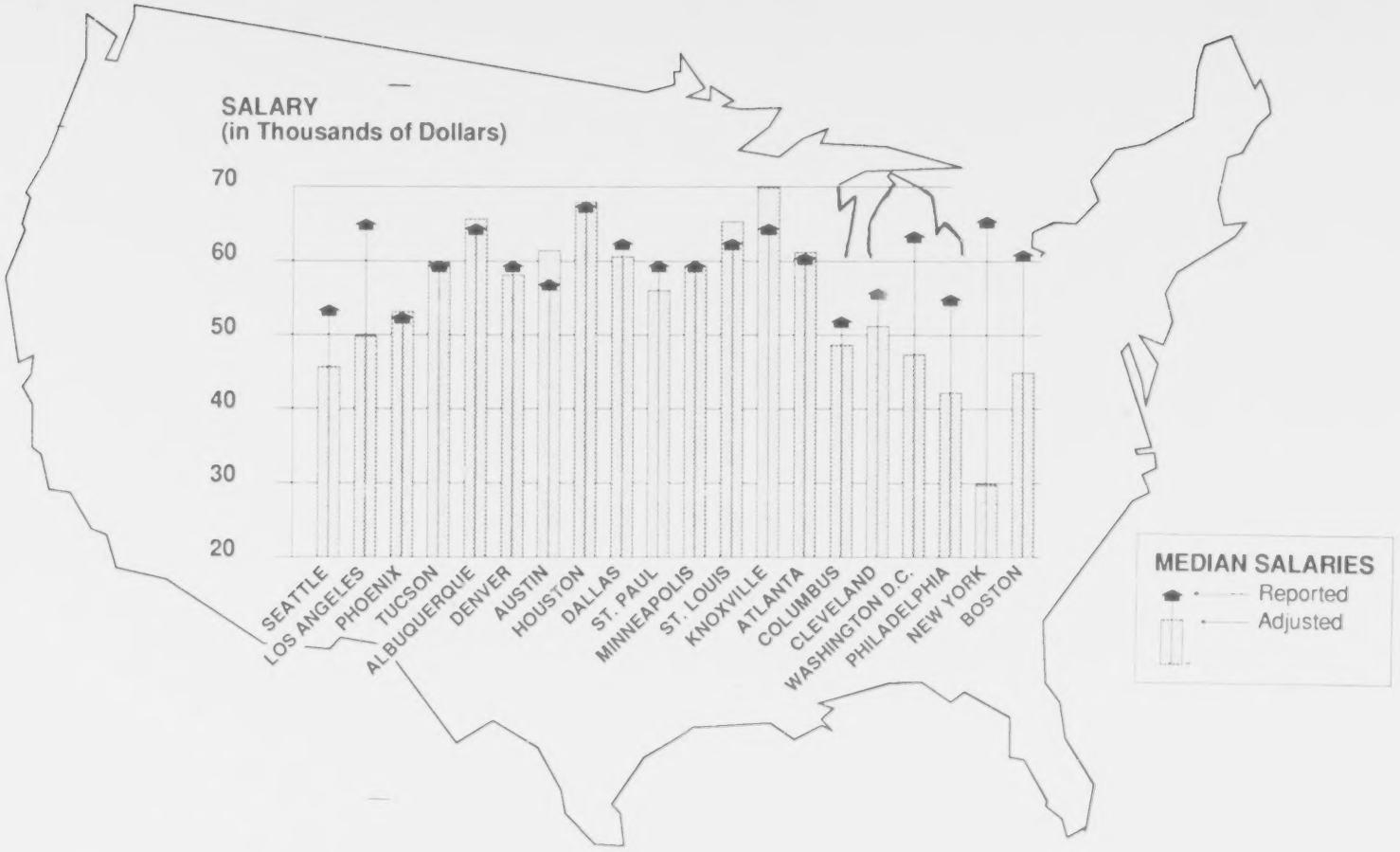

Figure 2. Median salaries for PhDs in selected metropolitan areas, 1992. Both reported salaries and salaries adjusted for cost of living are presented.

• The American Chamber of Commerce Researchers Association (ACCRA) publishes a quarterly report to "provide a useful and reasonably accurate measure of living cost differences among urban areas." Table 4 presents data gathered during the second quarter of 1992. Each of the cities listed in the table has a substantial number of society members in residence, permitting calculation of reliable medians. Some cities did not respond to the survey and therefore are not included in the table.

• The ACCRA survey is based upon relative price levels for a standardized basket of goods and services. The national average for the index is 100; areas with indices above this figure have a relatively high cost of living, while those with indices below 100 have a relatively low one. The adjusted salaries in Table 4 reflect rates of compensation after the cost of living is taken into account and cannot be considered representative of absolute buying power.

Table 4. 1992 median salaries adjusted for cost of living in selected metropolitan areas, PhDs. *(a)*

	Cost of Living Index	Median Salary	Adjusted Salary	Median Age	Academic %	Non-Academic %	Total Number Known
Albuquerque	98.9	65.0	65.7	43	23	77	96
Atlanta	99.6	61.0	61.2	45	74	26	53
Austin	93.7	57.5	61.4	47	87	13	52
Boston	136.9	61.5	44.9	43	60	40	202
Cleveland	110.0	56.3	51.2	48	48	52	45
Columbus	107.7	52.5	48.7	48	75	25	52
Dallas	104.0	63.0	60.6	41	18	82	40
Denver	103.3	60.0	58.1	48	19	81	59
Houston	100.2	68.0	67.9	45	41	59	107
Knoxville	93.0	65.0	69.9	49	23	77	68
Los Angeles	131.7	65.6	49.8	46	46	54	183
Minneapolis	101.3	60.0	59.2	42	74	26	49
New York	221.6	66.0	29.8	43	53	47	193
Philadelphia	131.5	55.5	42.2	47	63	37	92
Phoenix	99.7	53.0	53.2	40	67	33	25
St. Louis	96.5	63.0	65.3	48	61	39	43
St. Paul	107.2	60.0	56.0	40	22	78	32
Seattle	118.1	54.0	45.7	43	67	33	66
Tucson	100.4	60.0	59.8	44	72	28	75
Washington DC	135.0	64.0	47.4	48	7	93	230

(a)Cost of Living Index from the American Chamber of Commerce Researchers Association, national average=100.0.

$$\text{Adjusted salary} = \frac{\text{median salary}}{\text{cost of living \%}}$$

• The cities with the highest cost of living indices are New York (221.6), Boston (136.9), Washington D.C. (135.0), Los Angeles (131.7) and Philadelphia (131.5). Due to the high cost of living in these cities, adjusted salaries fell greater than 30% below their reported salaries in Boston, Washington D.C., Los Angeles and Philadelphia. New York's cost of living index forces a median salary of $66,000 to drop to a low adjusted salary of $29,800.

• When cost of living is accounted for, the metropolitan cities with the highest median annual salaries are Knoxville ($69,900), Houston ($67,900) and Albuquerque ($65,700). A majority of society members in Knoxville and Albuquerque are employed in high-paying nonacademic jobs, primarily at Oak Ridge and Sandia National Laboratories. Houston's high reported median salary is due, in part to high salaries earned by members working in oil companies, NASA, and university medical schools.

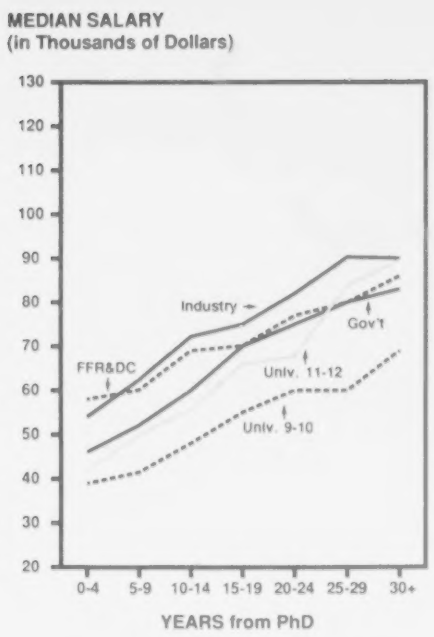

Figure 3. Median salaries by type of employer and years from PhD, 1992.

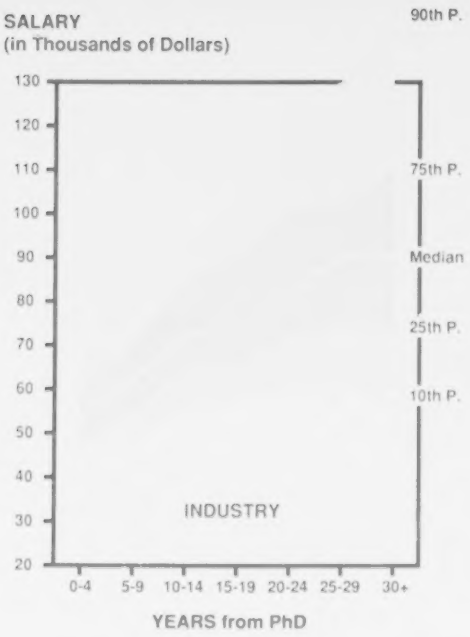

Figure 4. Salary structure in industry by years from PhD, 1992.

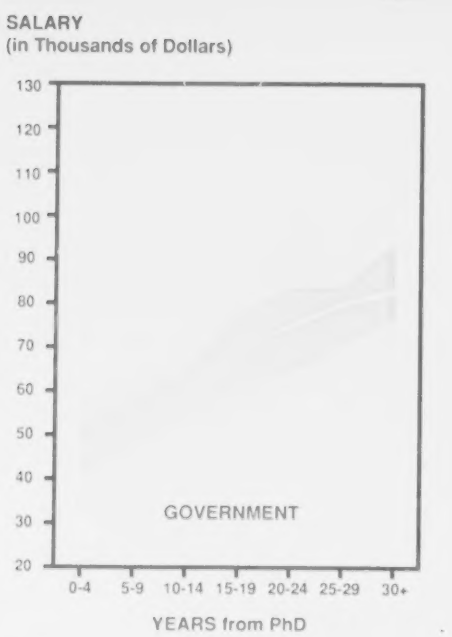

Figure 5. Salary structure in government by years from PhD, 1992.

SALARIES AND EMPLOYMENT SECTOR FOR PhDs

• The median salary increase from 1990 to 1992 for society members with PhDs was between 6 and 8% depending on employment sector.

• Society members employed in the hospital/medical services sector earn the highest median annual salary at $78,000, whereas members employed at 4-year colleges earn the lowest median salary ($43,000).

• Members employed by one of the four major employment sectors (industry, government, FFR&DC, university) with 4 or fewer years of experience earn, on average, $39,000 to $58,000 depending on the employment sector. Salaries then increase as years from degree increase. At lower levels of experience, salaries fall into a narrow range regardless of employment sector. As experience increases, however, differences between the various sectors become more pronounced.

• Almost 25% of society members with doctoral degrees are employed in the industrial sector where the median annual salary is $71,500, making it the second highest paid employment sector after hospital/medical services. As presented in Figure 4, the industrial salary structure is clustered in a fairly narrow range in the early career years; however, after fifteen years of experience, the distribution gets much wider. This is due to high-wage earners, primarily administrators, who in some cases earn in excess of $130,000 per year.

• The government sector employs approximately 12% of society members with doctoral degrees. Median salaries in the sector range from $46,100 for members with four or fewer years from degree to $83,000 for members with 30 or more years of experience. There is little variation between highest and lowest salaries in the government sector (see Figure 5). This is due to the structure of the civil service grades and of federal salary ceilings. Except at the highest levels of experience, government employees earn salaries below industry rates.

Table 5. 1992 salaries by major employment sector, PhDs. *(a)*

	Median Salary	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)				
University					
9-10 Month Salary	54.0	56.6	17.6	49	1640
11-12 Month Salary	52.0	57.7	28.5	41	1102
4-Year College					
9-10 Month Salary	43.0	44.4	12.2	48	288
Industry/Self-Employed	71.5	77.6	41.2	44	1623
Government	62.0	64.6	19.0	47	823
FFR&DC *(b)*	69.0	69.2	19.0	44	722
Nonprofit	60.0	63.3	26.7	42	180
Hospital	78.0	80.4	39.1	47	170
UARI *(b)*	53.7	58.2	24.7	40	83

(a) Postdoctorates included.
(b) FFR&DC = Federally Funded Research and Development Centers.
UARIs = University Affiliated Research Institutes and Observatories.

Table 6. 1992 salaries by years from degree, PhDs. *(a)*

Years from Degree	Median Salary	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)				
0-4	48.0	47.9	12.9	33	639
5-9	52.1	53.4	14.0	37	1059
10-14	61.0	62.7	17.9	41	964
15-19	67.1	69.9	29.1	46	961
20-24	71.0	74.7	32.4	50	1137
25-29	74.5	77.9	36.2	55	789
30 +	80.0	82.5	33.0	62	782

(a) Postdoctorates not included.

Table 7. 1992 industrial salary structure by years from degree, PhDs. *(a)*

Years from Degree	PERCENTILE SALARIES 10th	25th	Median	75th	90th	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)								
0-4	41.5	49.4	54.0	60.0	66.3	54.5	12.2	32	196
5-9	48.0	55.0	62.4	70.0	78.0	62.8	13.6	37	287
10-14	55.6	65.0	72.2	84.3	94.0	74.1	16.6	41	298
15-19	58.0	65.8	75.0	90.0	102.0	83.1	42.5	46	257
20-24	60.0	72.0	82.0	101.0	125.0	91.9	52.0	50	268
25-29	64.0	75.0	90.3	102.0	130.0	96.7	62.0	55	156
30 +	58.4	74.0	90.0	110.0	145.0	102.2	60.1	63	123

(a) In addition, there were 31 postdoctorates in the 0-4 years from degree group with a median salary of $48,000.

Table 8. 1992 government salary structure by years from degree, PhDs. *(a)*

Years from Degree	PERCENTILE SALARIES 10th	25th	Median	75th	90th	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)								
0-4	38.0	40.2	46.1	52.0	60.0	46.9	10.1	35	88
5-9	43.0	48.0	52.1	58.2	63.9	53.5	8.8	38	115
10-14	48.0	53.0	59.9	65.0	72.0	59.7	10.9	42	110
15-19	55.0	60.0	70.0	78.0	85.0	70.2	13.4	47	118
20-24	58.0	64.0	75.0	84.0	102.0	75.8	15.3	51	148
25-29	63.0	71.0	80.0	84.0	95.0	78.5	14.2	55	99
30 +	60.0	76.6	83.0	94.0	104.0	83.3	16.1	63	87

(a) In addition, there were 50 postdoctorates in the 0-4 years from degree group with a median salary of $36,000.

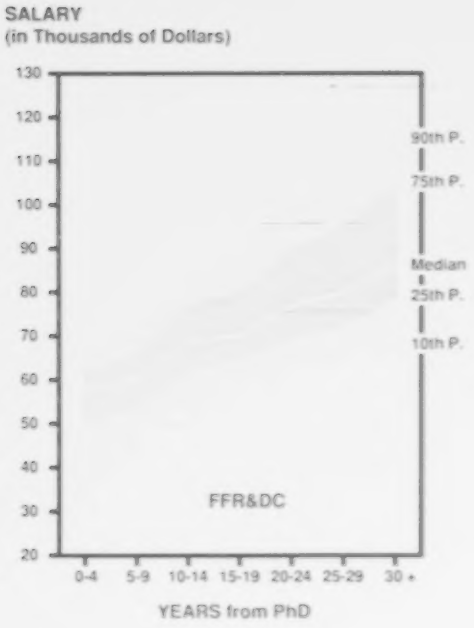

Figure 6. Salary structure in the national laboratories by years from PhD, 1992.

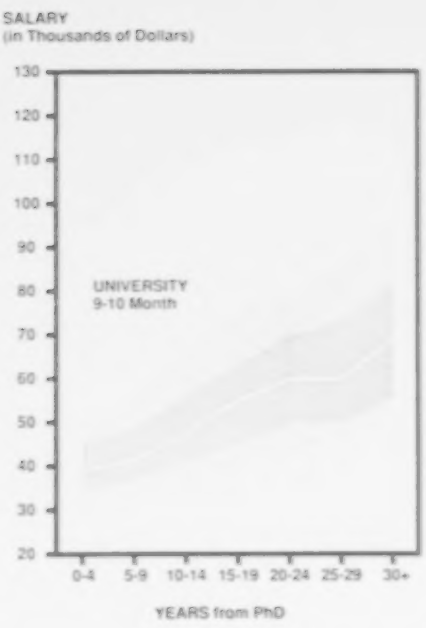

Figure 7. Salary structure in universities for 9-10 month salary base, by years from PhD, 1992.

Figure 8. Salary structure in universities for 11-12 month salary base, by years from PhD, 1992.

• Federally funded research and development centers employ approximately 11% of society members with doctoral degrees. The median annual salary for members employed by FFR&DC's is $69,000, earning just short of what industrially-employed members earn. More than 50% of society members with doctoral degrees who work at national laboratories are employed at either Los Alamos, Lawrence Livermore, Jet Propulsion Laboratory or Sandia National Laboratory.

• Median salaries for society members working in academe on 9-10 month contracts range from $39,000 for initial employment to $69,000 for those with 30 or more years from degree (see Figure 7). Almost 60% of society members employed in universities are on 9-10 month contracts. The university 9-10 month salary structure is clustered in a fairly narrow range regardless of years from degree. Approximately 83% of PhDs in this sector supplement their salary with some form of additional professional income. The most commonly reported additional income is from summer research and consulting.

• Median salaries for university employees on 11-12 month contracts are higher than salaries for members on 9-10 month contracts and more variability in salaries is observed (see Figure 8). As years from degree increase the variation in salaries broadens considerably, an effect evident within the industrial sector as well. This is due to the wide array of positions and corresponding salaries observed in academe, from professorships to administrative and research staff positions.

Table 9. 1992 FFR&DC salary structure by years from degree, PhDs. *(a)*

Years from Degree	PERCENTILE SALARIES (in thousands of dollars) 10th	25th	Median	75th	90th	Mean Salary	Standard Deviation	Median Age	Total Number Known
0-4	46.8	50.3	58.0	62.0	66.0	57.4	10.5	34	65
5-9	49.2	53.7	60.1	66.3	71.5	60.5	9.4	36	121
10-14	55.0	62.0	69.0	77.0	82.6	69.6	11.3	41	97
15-19	59.8	65.1	70.1	80.0	90.0	73.8	13.1	45	122
20-24	64.0	70.0	77.0	90.0	100.0	80.5	14.7	50	121
25-29	65.0	72.0	80.0	95.0	105.0	83.6	16.0	54	72
30+	68.0	79.0	86.0	105.0	115.0	90.2	19.7	62	54

(a) In addition, there were 58 postdoctorates in the 0-4 years from degree group with a median salary of $38,000.

Table 10. 1992 university 11-12 month salary structure by years from degree, PhDs. *(a) (b)*

Years from Degree	PERCENTILE SALARIES (in thousands of dollars) 10th	25th	Median	75th	90th	Mean Salary	Standard Deviation	Median Age	Total Number Known
0-4	30.0	36.0	42.0	50.9	61.0	43.9	11.9	33	66
5-9	36.0	42.0	50.0	59.0	69.0	50.6	12.1	37	172
10-14	38.0	45.0	55.7	67.0	85.0	58.6	19.0	41	111
15-19	43.0	53.5	66.0	81.0	102.0	69.5	23.3	46	126
20-24	47.7	56.9	67.8	87.0	109.0	74.7	26.3	50	142
25-29	59.0	70.0	84.0	101.0	120.0	87.1	23.5	55	107
30 +	61.0	73.2	89.6	105.0	130.0	93.0	25.5	61	106

(a) In addition, there were 246 postdoctorates in the 0-4 years from degree group with known salaries working in universities on an 11-12 month salary base. Their median salary was $30,000.
(b) UARI's not included.

Table 11. 1992 university 9-10 month salary structure by years from degree, PhDs. *(a) (b)*

Years from Degree	PERCENTILE SALARIES (in thousands of dollars) 10th	25th	Median	75th	90th	Mean Salary	Standard Deviation	Median Age	Total Number Known
0-4	32.0	35.0	39.0	45.5	50.0	40.2	7.3	33	135
5-9	33.0	37.0	41.5	48.2	55.0	42.9	8.6	36	222
10-14	38.6	41.7	48.0	56.0	65.0	50.3	12.0	40	197
15-19	38.1	45.0	55.0	63.0	76.4	55.8	15.0	45	189
20-24	43.4	50.0	60.0	70.0	79.3	60.7	14.1	50	296
25-29	43.5	50.0	60.0	72.8	87.0	63.1	17.0	55	259
30 +	51.0	58.5	69.0	82.0	96.7	71.4	17.2	62	328

(a) UARI's and postdoctorates not included.
(b) Number of postdoctorates was too small to calculate reliable medians.

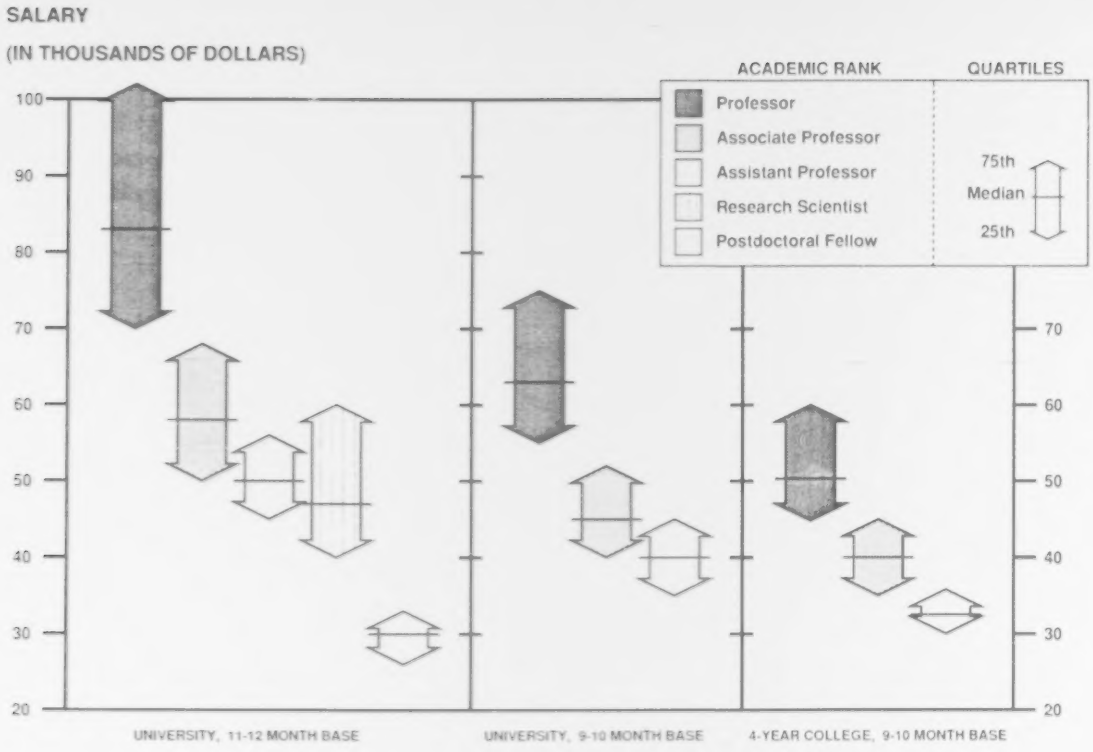

Figure 9. University and 4-year college salaries for PhDs by academic rank, 1992.

Salaries and Academic Rank

• More society members are employed in universities than in any other employment sector. As a group, the academics tend to be older and are paid at a lower rate than the nonacademic society members.

• Academic salaries vary by rank, discipline, and type of institution. According to the 1992-1993 American Association of University Professors (AAUP) report, faculty members at private, independent institutions earn the highest salaries, followed by faculty at public institutions and finally those at private, church-related institutions earn the least. In addition, the types of degrees an institution awards determines academic employee salaries. Highest salaries are paid by doctoral-granting institutions, followed by comprehensive, baccalaureate, and two-year institutions.

• Salaries of society members vary by academic rank and by salary base. At each rank, society members employed on 11-12 month contracts earn a higher median salary than those on 9-10 month contracts when postdoctorates are excluded from analyses (see Figure 9). Professors on 11-12 month contracts earn more because they report salaries that cover the entire year, they tend to be older and the group includes administrators who in many cases earn very high salaries. University professors employed on 11-12 month contracts receive the widest range of salaries: between $70,000 and $102,000, on average. This reflects the wide range of careers and salary ranges available to university professors.

Table 12. 1992 university salaries by selected academic rank and salary base, PhDs. *(a)*

	QUARTILE SALARIES 25th	Median	75th	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)						
Professor							
9-10 Month Salary	55.0	63.0	75.0	66.1	16.0	54	971
11-12 Month Salary	70.0	83.0	102.0	87.4	24.9	54	349
Associate Professor							
9-10 Month Salary	40.0	45.0	52.0	46.6	8.9	42	351
11-12 Month Salary	50.0	58.0	68.0	60.6	15.6	43	134
Assistant Professor							
9-10 Month Salary	35.0	40.0	45.0	40.3	6.9	35	286
11-12 Month Salary	44.4	50.0	56.0	50.7	11.9	37	114
Research Associate (11-12 Month Salary)							
Postdoctorates	26.0	30.0	32.7	29.4	5.5	32	242
Other Research Staff	40.0	47.0	60.0	49.4	14.5	41	190

(a) UARI's not included.

Table 13. 1992 university affiliated research institutes and observatories salaries by selected academic rank, PhDs.

	QUARTILE SALARIES 25th	Median	75th	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)						
Postdoctorates	32.0	34.0	35.0	33.6	3.4	34	23
Other Research Staff	52.0	65.0	80.0	68.4	22.3	44	60

Table 14. 1992 4-year college salaries by selected academic rank on 9-10 month salary base, PhDs.

	QUARTILE SALARIES 25th	Median	75th	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)						
Professor	44.8	50.3	60.0	52.1	11.4	53	142
Associate Professor	35.0	40.0	45.0	40.4	7.5	43	85
Assistant Professor	30.0	32.5	35.8	33.1	5.7	36	59

• Less than 5% of society members with doctoral degrees are employed in 4-year colleges. Professors, associate professors and assistant professors employed in 4-year colleges earn less than their counterparts employed by universities. Median salaries are approximately 10-25% lower at each rank than salaries of members on 9-10 month salary contracts.

• AIP society members who are postdoctorate fellows earn the lowest median salary in the academic sector ($30,000). The small number of postdoctorates working in the nonacademic sector earn somewhat higher median salaries than their academic counterparts. The median salary for postdoctorates in industry is $48,000, in FFR&DC's the median salary is $38,000 and in the government sector the median annual salary is $36,000.

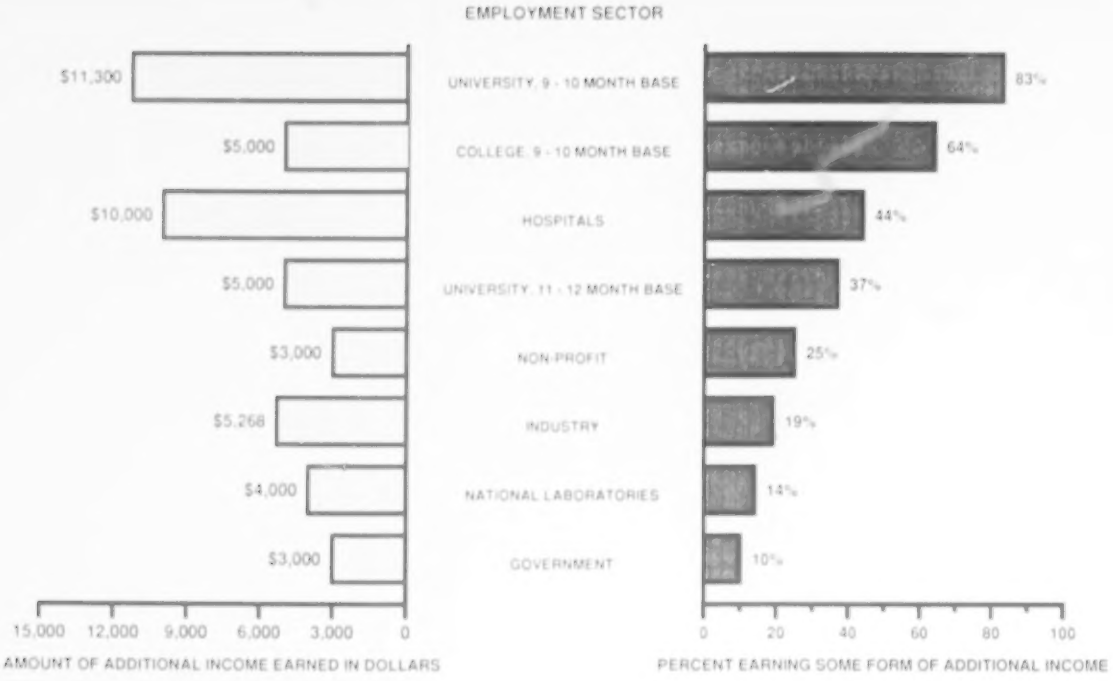

Figure 10. Median additional income, and percent earning some form of additional income, by type of employer, 1992.

Additional sources of Professional Income

• Over one-third of full-time employed PhDs supplement their principal salaries with earnings from additional sources. The additional income comes from such sources as: consulting, summer research and summer teaching. The amount of additional income earned varies from $3,000 in the government and non-profit sectors to $11,300 for PhDs in universities on 9-10 month salary bases.

• Members employed in academe are more likely to earn additional professional income than members employed in any other employment sector. More than 80% of those society members employed by universities on 9-10 month salary contracts supplement their salaries with additional income. The median annual additional income for this group is $11,300, highest of all sectors. More than 60% of those employed at 4-year colleges and almost 40% of those employed at universities with 11-12 month contracts supplement their salaries with additional income (see Figure 10).

• In the nonacademic sector, society members employed by hospitals are most likely to supplement their salaries with additional income. Of those members earning additional income, 87% consult. At an average of $10,000 additional dollars per year, hospital employees earn total median salaries well above their industrial colleagues.

• Society members employed in national labs and government jobs are least likely to earn additional income in a large part because of laws prohibiting it. Only 10% of government employees and 14% of society members employed in national laboratories report earning any form of additional income, averaging $3,000 - $4,000 per year.

Table 15. 1992 salaries by selected employment sector, Masters.

	Median Salary	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)				
Junior College	40.0	41.9	11.0	47	76
Secondary School Teachers	40.0	41.0	12.1	47	288
Industry/Self-Employed	58.0	62.0	24.8	40	557
Government	50.5	52.4	13.3	42	287
FFR&DC	55.0	58.7	20.0	42	59
Nonprofit	57.0	61.7	30.7	43	26
Hospital	63.0	61.3	17.6	38	185

SALARIES FOR MASTERS AND BACHELORS

• Most lower degree holders among society members are advanced graduate students and are not included in employment salary analyses. However, approximately 24% of society members working full-time reported bachelors or masters degrees as their highest degree level (18% masters, 6% bachelors) and are included in salary analyses. These members tend to be atypical of masters and bachelors degree holders in the physical sciences and have very specific society interests. They are primarily employed by industry, secondary schools and government.

• Almost 40% of society members holding masters degrees are employed in industry, followed by equal percentages working as secondary school teachers and government employees (19% each). Although industrial salaries for masters degree holders are lower than those earned by PhDs in industry, the salary structure is similar. Median salaries are clustered in a fairly narrow range in the early career years but broaden after approximately ten years of experience as career options increase.

• Masters degree recipients who are employed by industry earn higher median salaries than members working as teachers in secondary schools. At entry level, salaries of the highest paid secondary school teachers overlap with the lowest salaries earned by members employed in industry. After nine years of experience, salaries for each group differ sharply, with industrial employees earning significantly higher salaries (see Figure 11). Even though teachers in secondary schools are, on average, seven years older than their industrially-employed counterparts their salaries are lower than the industrially employed.

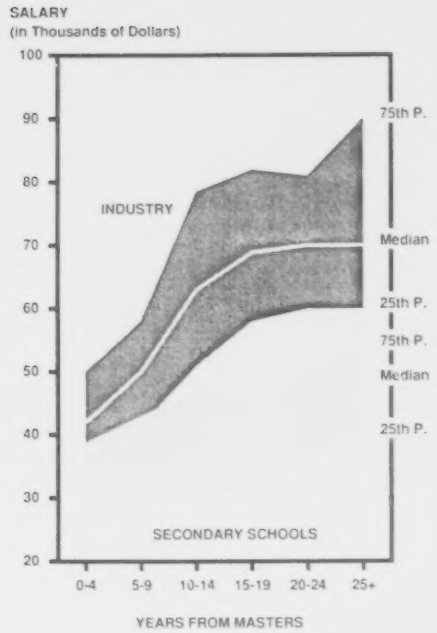

Figure 11. Salary structure in industry and for teachers in secondary schools by years from Masters degree, 1992.

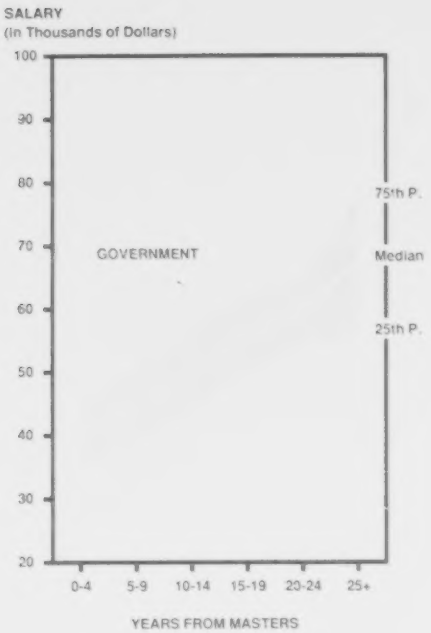

Figure 12. Salary structure in government by years from Masters degree, 1992.

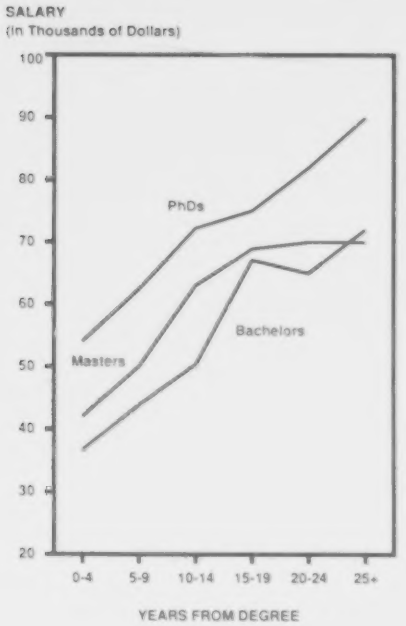

Figure 13. Median salaries in industry by degree level and years from degree, 1992.

• Government employees with masters degrees earn median annual salaries between $41,000 and $67,600 depending on years of experience. Similar to the salary structure in the secondary school employment sector, there is little variation between the highest and lowest salaries in the government sector (see Figure 12). Government salaries are higher, on average, than salaries paid to secondary school teachers, but lower than those paid to industrially-employed members.

• Hospitals, junior colleges and national laboratories employ small numbers of masters degree recipients. Members employed by hospitals earn the highest median salary at $63,000.

• Society members with bachelors degrees work predominantly in the industrial sector (48%), followed by secondary schools (16%), and government agencies (15%).

• Industry is the only sector with enough lower degree holders among the societies' membership for comparison of median salaries across degree levels. Median salaries for members with bachelors degrees employed by industry range from a low of $36,700 to a high of $72,000. As would be expected, society members with PhDs working in industry earn the highest median salary followed by members with masters degrees. Society members with bachelors degrees earn the lowest median salary (see Figure 13). Society members with doctoral degrees and 4 or fewer years of experience earn a median salary of $54,000, those with masters degrees earn $42,000 and those with bachelors degrees earn a median annual salary of $36,700.

Table 16. 1992 salaries by selected employment sector and years from degree, Masters.

	Years from Degree	QUARTILE 25th	Median	75th	Mean Salary	Standard Deviation	Median Age	Total Number Known
		(in thousands of dollars)						
Secondary (teachers only)	0-4	24.8	32.0	38.8	33.1	11.3	39	37
	5-9	30.0	35.0	43.0	36.2	11.1	42	40
	10-14	31.0	36.0	47.0	39.2	10.3	44	34
	15-19	31.0	40.0	45.3	40.2	11.3	46	61
	20-24	37.0	45.0	50.0	45.0	11.7	49	68
	25 +	40.0	48.5	54.0	48.3	10.8	55	46
Industry	0-4	36.0	42.0	50.0	44.5	11.2	32	115
	5-9	41.5	50.0	58.0	51.4	15.6	34	125
	10-14	51.0	63.0	78.5	69.3	26.3	40	96
	15-19	58.0	68.9	82.0	69.8	16.9	44	57
	20-24	60.0	70.0	81.0	74.6	25.4	49	59
	25 +	60.0	70.0	90.0	76.6	28.8	59	99
Government	0-4	35.0	41.0	45.1	41.8	9.3	32	46
	5-9	38.9	44.3	51.0	45.0	9.6	36	58
	10-14	44.0	50.0	57.0	51.0	10.0	40	51
	15-19	50.0	56.0	63.0	56.5	10.0	44	49
	20-24	54.0	60.0	65.0	59.0	10.1	49	36
	25 +	56.0	67.6	77.5	66.0	14.5	57	47

Table 17. 1992 industrial salaries by years from degree, Bachelors.

	Median Salary	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)				
0-4	36.7	37.3	7.5	28	31
5-9	43.8	45.9	14.5	31	56
10-14	50.3	53.6	15.1	35	47
15-19	67.1	67.4	22.1	41	27
20-24	65.0	69.8	29.9	45	40
25 +	72.0	77.9	33.9	57	92

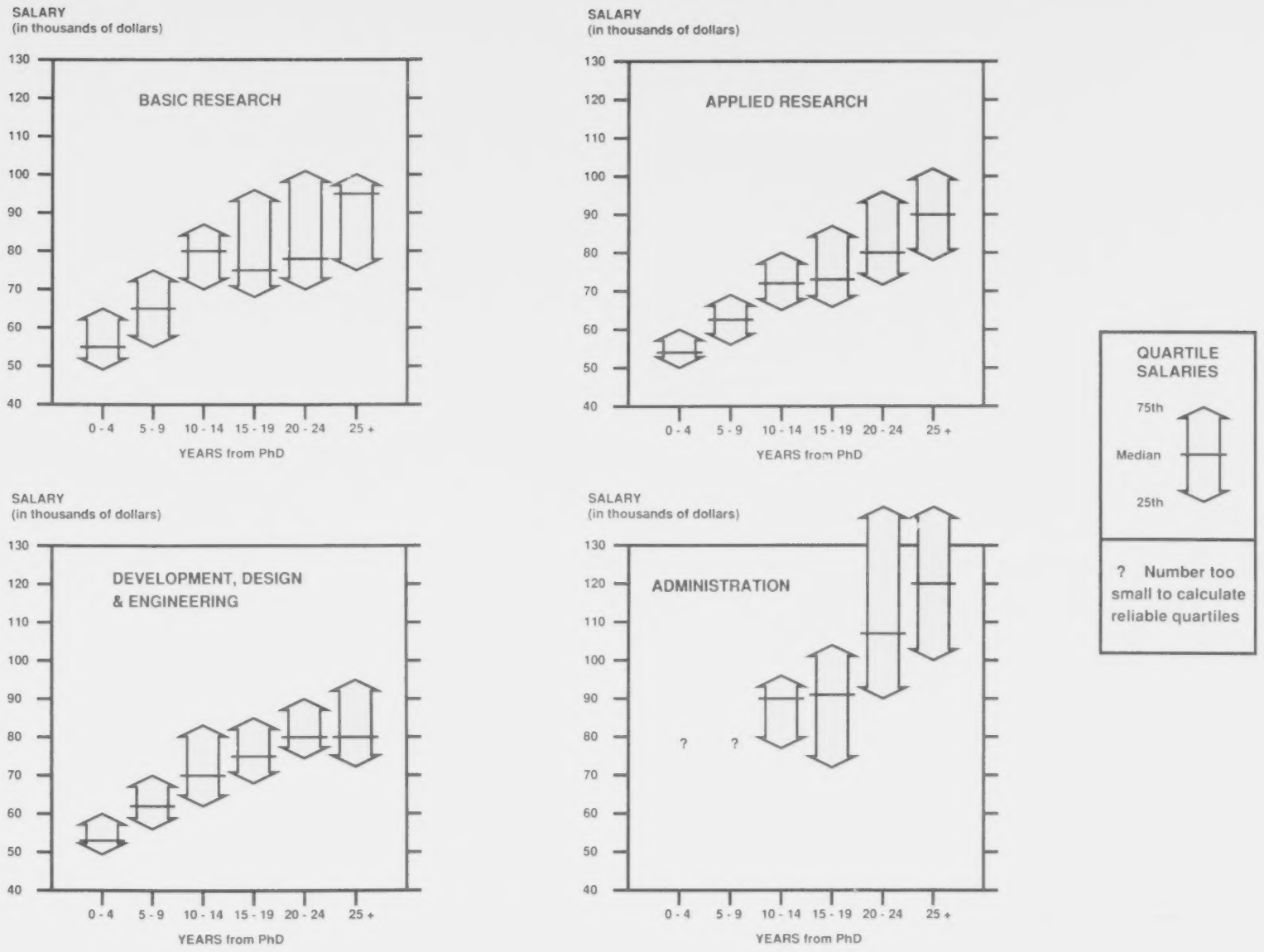

Figure 14. Industrial salaries by principal work activity and years from PhD, 1992.

Table 18. 1992 industrial salaries by primary work activity and years from degree, PhDs

Years from Degree	QUARTILE 25th	Median	75th	Mean Salary	Standard Deviation	Median Age	Total Number Known
	(in thousands of dollars)						
Basic Research							
0-4	49.1	55.0	65.0	55.3	10.7	32	18
5-9	55.0	65.0	75.0	63.4	13.6	36	35
10-14	70.0	80.0	87.0	78.2	15.1	39	28
15-19	68.0	75.0	96.0	78.6	20.2	45	20
20-24	70.0	78.0	101.0	84.1	22.9	49	20
25 +	75.0	95.0	100.1	95.2	26.3	57	29
Applied Research							
0-4	50.0	54.0	60.0	55.1	8.2	32	99
5-9	56.0	62.5	69.0	62.9	11.7	37	157
10-14	65.0	72.0	80.0	72.5	12.6	41	135
15-19	65.8	73.0	87.0	76.1	14.5	46	83
20-24	71.6	80.0	96.0	90.1	62.7	50	100
25 +	78.0	90.0	102.0	96.4	76.3	59	96
Development, Design, and Engineering							
0-4	49.4	53.0	60.0	53.7	9.0	33	47
5-9	56.0	62.0	70.0	62.2	11.5	37	64
10-14	62.0	70.0	83.1	72.4	15.3	42	79
15-19	68.0	75.0	85.0	83.5	54.2	46	73
20-24	74.5	80.0	90.0	86.6	21.3	51	57
25 +	72.3	80.0	95.0	84.1	19.9	58	47
Administration							
0-4	*	*	*	*	*	*	4
5-9	*	*	*	*	*	*	3
10-14	77.0	90.0	96.0	83.3	18.2	41	19
15-19	72.0	91.0	104.0	94.0	27.8	46	31
20-24	90.0	107.0	140.0	123.5	73.9	50	41
25 +	100.0	120.0	140.0	129.8	60.6	58	47

* *Number of respondents was too small to calculate reliable quartiles.*

SALARIES AND PRIMARY WORK ACTIVITY

• Industry employs 25% of society members with doctoral degrees. More society members report holding jobs in applied research than in any other work activity (see Table 18).

• Industrial salaries are similar for PhDs, regardless of their primary work activity. Beginning salaries vary between $53,000 and $55,000 and members engaged in research, development, design or engineering have similar salary rates throughout their careers.

• Salaries are consistent throughout the industrial employees careers with the exception of administrators who typically move into administration late in their careers and earn higher salaries.

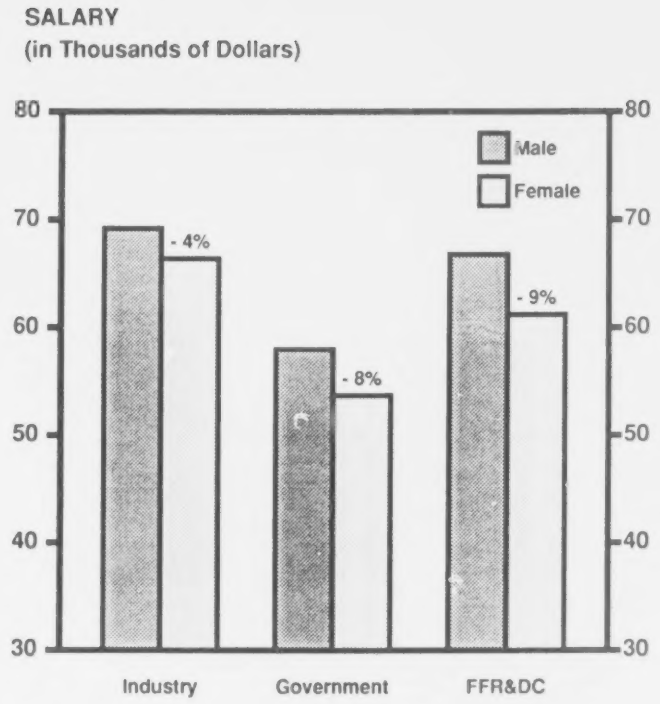

Figure 15. Mean salaries in industry, government and FFR&DC by gender, 1992. Statistics controlled for years of experience.

Table 19. 1992 reported and adjusted salaries by selected employment sectors and gender, PhDs. *(a)*

	Reported Mean Salary (in thousands of dollars)	Adjusted Mean Salary *(b)*	Mean Age	Total Number Known
Industry				
Male	78.9	69.2	45	1487
Female	66.4	66.4	39	85
Government				
Male	67.8	58.0	48	707
Female	53.7	53.7	42	53
FFR&DC				
Male	73.4	66.8	46	605
Female	61.2	61.2	39	45

(a) Postdoctorates excluded.
(b) Salaries adjusted from mean salaries by years from degree.

SALARIES FOR MALES AND FEMALES

• Among full time employed society members, women comprise only 8% of PhD recipients, 16% of masters degree recipients and 11% of bachelors degree recipients. These percentages have risen slightly over the last decade.

• Both men and women are predominantly employed in the university setting, followed by industry and government. In the industrial, government and FFR&DC sectors of employment, women earn lower average salaries than men when differences in years of experience are statistically controlled. The difference is greatest in the FFR&DC sector (9%) followed by the government sector (8%) (see Figure 15). Although national labs and government employees show significant salary differences, both men and women indicate similar overall satisfaction with their salaries.

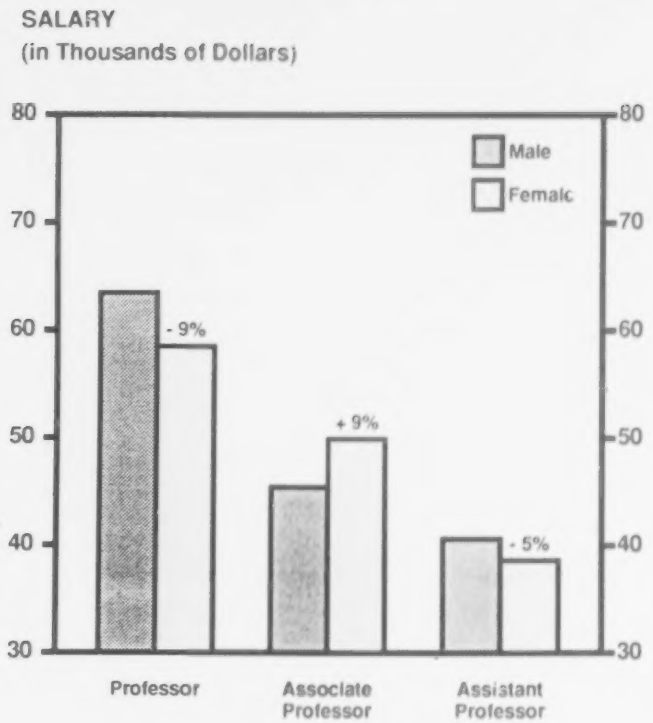

Figure 16. Mean salaries in university 9-10 month salary base by gender, 1992. Statistics controlled for years of experience.

Table 20. 1992 reported and adjusted university 9-10 month salary structure by gender, PhDs. *(a)*

	Reported Mean Salary (in thousands of dollars)	Adjusted Mean Salary *(b)*	Mean Age	Total Number Known
Professor				
Male	65.8	63.5	54	894
Female	58.5	58.5	49	32
Associate Professor				
Male	46.3	45.4	44	318
Female	49.9	49.9	41	31
Assistant Professor				
Male	40.6	40.6	35	232
Female	38.6	38.6	36	51

(a) Postdoctorates excluded.
(b) Salaries adjusted from mean salaries by years from degree.

• In the university setting, salary differences between men and women are dependent on the academic rank of the employees. Women PhDs tend to hold lower academic ranks than their male colleagues in part because women are, as a group, younger than men. Full and assistant professors who are women earn lower average salaries than their male counterparts, whereas female associate professors earn higher average salaries than men (see Figure 16). Salary satisfaction ratings for associate professors who are men were low compared to satisfaction ratings for associate professors who are women.

APPENDIX A: GEOGRAPHICAL DIVISIONS

NEW ENGLAND
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

MIDDLE ATLANTIC
New Jersey
New York
Pennsylvania

SOUTH ATLANTIC
Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia
Puerto Rico

EAST NORTH CENTRAL
Illinois
Indiana
Michigan
Ohio
Wisconsin

EAST SOUTH CENTRAL
Alabama
Kentucky
Mississippi
Tennesee

WEST NORTH CENTRAL
Iowa
Kansas
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

WEST SOUTH CENTRAL
Arkansas
Louisiana
Oklahoma
Texas

MOUNTAIN
Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

PACIFIC
Alaska
California
Hawaii
Oregon
Washington

APPENDIX B: TECHNICAL NOTES

Median

The median, a measure that is frequently used in this report, is that point in a distribution above and below which 50% of the values fall. Since it is less influenced by extreme values than the arithmetic mean, it is the preferred descriptive measure of central tendency in typically skewed salary and age distributions. In most of the tables, both median and mean salaries are presented; observed differences reflect the skewness in the distributions.

Quantile Calculations

The P-STAT statistical package was used to compute the medians and other quantiles presented in the salary tables and figures. Percentiles were not interpolated when the requested quantiles fell a certain fraction into a group of equal values or when fractional weights were used.

Quantiles and Interquantile Ranges

Ninety percent of the values in a distribution fall below the ninth decile, seventy-five percent below the third quartile, twenty-five percent below the first quartile and ten percent below the first decile. The interdecile and interquartile ranges, which indicate differences between deciles and between quartiles, are measures of variation within distributions and are used in several of this report's figures.

Employment Base

Salary data are presented for current society members who are employed full-time in the U.S. Students are not included.

Sampling Error

The salary figures in this report may be affected by different sources of error. Society members who did not respond may have had somewhat different salaries than those who did respond, thus introducing response bias. Although earlier surveys in this series estimated that the effects of response bias were minor, the possible effect remains. Since the data in this report are based upon a small random sample, they are also subject to sampling error. The variability introduced by the sampling procedure depends both on the size of the subgroup being examined, and the variation of values in the population. The formulas below present conservative estimates of the standard error based on simple random sampling. When standard errors were calculated, taking into account the minor stratification by society used in the sampling, slightly lower estimates resulted. Confidence intervals for proportions, means, and medians can be determined as follows:

Medians:

M_1, *that point below which* p_1^{th} values fall,

M_2, *that point below which* p_2^{th} values fall,

where

$$p_1 = p + Z\left(\frac{p(1-p)}{n}\right)^{1/2}, \quad p_2 = p - Z\left(\frac{p(1-p)}{n}\right)^{1/2},$$

and

$P = 0.5$,
n = sample size,
z = coefficient of confidence, 1.96 at the 95% confidence level.

Means:

$\bar{x} \pm Zs/(n)^{1/2}$, *where*
$\bar{x}$ = the arithmetic mean,
s = standard deviation,
n = sample size, and
Z = coefficient of confidence 1.96 at the 95% confidence level.

Proportions:

$$p \pm Z\left(\frac{p(1-p)}{n}\right)^{1/2}$$

p = sample proportion observed,
n = sample size, and
Z = coefficient of confidence, 1.96 at the 95% confidence level.

Cost-of-Living Index

The cost-of-living index used in this report was developed by the American Chamber of Commerce Researcher's Association (ACCRA). It's purpose is to provide "a useful and reasonably accurate measurement of inter-city cost of living differences." The index measures "relative price levels for consumer goods and services in participating cities (metropolitan and nonmetropolitan)." Differences of more than three index whole numbers in the all-items index can be considered to represent actual inter-city differences in the cost of consumer goods and services; but the percentage difference in such cases should be considered a reasonable indication, rather than a precise measure, of the extent of the differences.